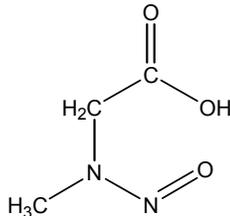


N-NITROSOSARCOSINE

CAS No. 13256-22-9

First Listed in the *Second Annual Report on Carcinogens*



CARCINOGENICITY

N-Nitrososarcosine is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC 1978, 1987). When administered in the diet, *N*-nitrososarcosine induced squamous cell carcinomas of the nasal region in mice of both sexes. When administered in the drinking water, *N*-nitrososarcosine induced papillomas and squamous cell carcinomas of the esophagus in rats. When administered by intraperitoneal injection, *N*-nitrososarcosine induced hepatocellular carcinomas in newborn male mice (IARC 1978).

No adequate human studies of the relationship between exposure to *N*-nitrososarcosine and human cancer have been reported (IARC 1978, 1987).

PROPERTIES

N-Nitrososarcosine is a pale yellow crystalline solid. It is soluble in water and in polar organic solvents. It decomposes when exposed to light and is especially sensitive to ultraviolet light. When heated to decomposition, it emits toxic fumes of nitrogen oxides. It is unstable in aqueous solutions (HSDB 2001).

USE

N-Nitrososarcosine is not used commercially in the United States. There is limited use for the compound in research (IARC 1978, HSDB 2001).

PRODUCTION

There is no evidence that *N*-nitrososarcosine has been produced commercially in the United States. Synthetic production of nitrosamines is limited to small quantities, primarily for use as research chemicals (HEEP 1980). Chem Sources identified three U.S. suppliers of *N*-nitrososarcosine in 2001 (Chem Sources 2001).

EXPOSURE

The primary routes of potential human exposure to *N*-nitrososarcosine are inhalation, ingestion, and dermal contact. In air, it is predominantly in the gas phase and degrades in the atmosphere by reaction with photochemically produced hydroxyl radicals (half-life of 1.9 days). Investigations have detected *N*-nitrososarcosine in foodstuffs, particularly in smoked meat at concentrations of 2 to 56 µg/kg, and in tobacco smoke at concentrations of 22 to 460 ng/cigarette (IARC 1978, HSDB 2001, Tricker *et al.* 1991).

REGULATIONS

EPA's Carcinogen Assessment Group includes *N*-nitrososarcosine on its list of potential carcinogens. As a result, EPA regulates *N*-nitrososarcosine under the Resource Conservation and Recovery Act (RCRA), subjecting it to reporting and record-keeping requirements. EPA solicited comments on possible designation of a reportable quantity (RQ) for *N*-nitrososarcosine under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

OSHA regulates *N*-nitrososarcosine under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 138.

REFERENCES

Chem Sources. Chemical Sources International, Inc. <http://www.chemsources.com>, 2001.

HEEP. Health and Environmental Effects Profile. Nitrosamines, No. 137. Washington, DC: Office of Solid Waste and Emergency Response, U.S. EPA, 1980.

HSDB. Hazardous Substances Data Bank. Online database produced by the National Library of Medicine. *N*-Nitrososarcosine. Profile last updated August 9, 2001. Last review date, January 31, 1998.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Some *N*-Nitroso Compounds. Vol. 17. 365 pp. Lyon, France: IARC, 1978.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Overall Evaluations of Carcinogenicity. Supplement 7. 440 pp. Lyon, France: IARC, 1987.

Tricker, A.R., C. Ditrich, and R. Pruessmann. *N*-Nitroso Compounds in Cigarette Tobacco and Their Occurrence in Mainstream Tobacco Smoke. Carcinogenesis. Vol. 12, 1991, pp. 257-261.